

WHAT IS CLAIMED IS:

1. A semiconductor laser device, comprising a semiconductor laser array for excitation having a plurality of semiconductor laser elements, and an optical resonator having a solid-state laser medium with a reflection mirror formed on one end surface and an output mirror provided in parallel to said reflection mirror, wherein laser beams emitted from the plurality of said semiconductor laser elements enter said optical resonator independently from each other, and the laser beams are respectively amplified and are projected by said optical resonator.

2. A semiconductor laser device, comprising at least two sets of light emitting units and an optical element for superimposing laser beams emitted from said two sets of light emitting units, wherein each of said light emitting units comprises a semiconductor laser array for excitation having a plurality of semiconductor laser elements, and an optical resonator having a solid-state laser medium with a reflection mirror formed on one end surface and an output mirror provided in parallel to said reflection mirror, wherein laser beams emitted from the plurality of said semiconductor laser elements enter said optical resonator independently from each other, and the laser beams are respectively amplified and are projected by said optical resonator.

3. A semiconductor laser device, comprising a plurality of light emitting units which respectively have at least two sets of light emitting subunits and an optical element for superimposing laser beams emitted from said two sets of light emitting subunits, wherein said each subunits

comprises a semiconductor laser array for excitation having a plurality of semiconductor laser elements, and an optical resonator having a solid-state laser medium with a reflection mirror formed on one end surface and an output mirror provided in parallel to said reflection mirror, wherein laser beams emitted from the plurality of said semiconductor laser elements enter said optical resonator independently from each other, and the laser beams are respectively amplified and are projected by said optical resonator, and wherein laser beams emitted from said light emitting units are respectively projected to optical fibers and the laser beams are joined to a laser beam by bundling said optical fibers.

4. A semiconductor laser device according to one of claims 1 to 3, wherein a reflection plate is arranged to correspond to the solid-state laser medium, and said output mirror is formed on said reflection plate.

5. A semiconductor laser device according to one of claims 1 to 3, wherein an optical crystal member for wavelength conversion is provided between said reflection mirror and said output mirror.

6. A semiconductor laser device according to one of claims 1 to 3, wherein a passive Q-sw element is provided between said reflection mirror and said output mirror.

7. A semiconductor laser device according to one of claims 1 to 3, wherein an optical crystal member for wavelength conversion and a passive Q-sw element are provided between said reflection mirror and said output mirror.

8. A semiconductor laser device according to one of claims 1 to 3, wherein said solid-state laser medium is

designed in planar shape.

9. A semiconductor laser device according to one of claims 1 to 3, wherein said solid-state laser medium and said reflection plate are designed in planar shape and are piled with each other.

10. A semiconductor laser device according to one of claims 1 to 3, wherein said solid-state laser medium and said optical crystal member for wavelength conversion are designed in planar shape and are piled with each other.

11. A semiconductor laser device according to one of claims 1 to 3, wherein said solid-state laser medium and said passive Q-sw element are designed in planar shape and are piled with each other.

12. A semiconductor laser device according to one of claims 1 to 3, wherein said solid-state laser medium, said optical crystal member for wavelength conversion and said passive Q-sw element are designed in planar shape and are piled with each other.

13. A semiconductor laser device according to claim 11, wherein piling is carried out by use of a spacer.

14. A semiconductor laser device according to claim 12, wherein piling is carried out by use of a spacer.

15. A semiconductor laser device according to claim 13, wherein said spacer is a film formed by means such as coating, vapor deposition.

16. A semiconductor laser device according to one of claims 1 to 3, wherein said semiconductor laser array for excitation is formed by arranging semiconductor laser elements so that fast axis directions of all laser beams

concur with each other, and a rod lens for converging light components of fast axis directions of the laser beams is provided in parallel to said semiconductor laser element array.

17. A semiconductor laser device according to claim 3, wherein the laser beams emitted from said optical resonator are joined together by an optical member and are projected into a single optical fiber.